

AMENDMENTS TO THE CLAIMS

Please amend claims 1-30.

Please enter the pending claims as follows:

This listing of the claims replaces all prior versions, and listings, of claims in the application.

Listing of the Claims

1. (Currently Amended) A method comprising:

determining an index-matching liquid;

determining a set of one or more constituents based on said index-

matching liquid;

providing a photoresist for use in an immersion lithography system;

adding said set of one or more constituents to said photoresist;

and

altering the liquid-contact properties of the said photoresist by adding

a set of one or more constituents into the liquid photoresist.

2. (Currently Amended) The method of claim 1 wherein ~~the~~ said set of one or more constituents is determined based upon ~~an~~ said index-matching liquid of ~~the~~ an immersion lithography exposure system.
3. (Currently Amended) The method of claim 2 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water.
4. (Currently Amended) The method of claim 3 wherein ~~the~~ said set of one or more constituents ~~includes~~ comprises at least one water-insoluble constituent.
5. (Currently Amended) The method of claim 4 wherein ~~one of the~~ said at least one water-insoluble ~~constituent is a~~ constituent is selected from ~~the~~ a group consisting of a hydrophobic ionic photoacid generator and a non-ionic photoacid generator.
6. (Currently Amended) The method of claim 4 wherein said at least one ~~of the~~ water-insoluble ~~constituent comprises~~ constituent is a water-insoluble quencher.
7. (Currently Amended) The method of claim 4 wherein said at least one ~~of the~~ water-insoluble ~~constituent comprises~~ constituent is a water-insoluble polymer.
8. (Currently Amended) The method of claim 4 wherein water-soluble constituents are bound to said at least one ~~of the~~ water insoluble constituent ~~constituents~~ via a

binding method selected from ~~the~~ a group consisting of covalent binding, ion pairing, and Van der Waal's forces.

9. (Currently Amended) The method of claim 4 wherein said at least one ~~or more of the water-insoluble constituent constituents~~ may react when said photoresist is used to modulate susceptibility to etch.
10. (Currently Amended) The method of claim 3 wherein ~~the~~ said set of one or more constituents ~~includes~~ comprises at least one water-soluble constituent.
11. (Currently Amended) The method of claim 10 wherein said at least one ~~of the water-soluble constituents is a constituent~~ is selected from ~~the~~ a group consisting of a water-soluble photoacid generator, a water-soluble quencher, a water-soluble buffer, a water-soluble surfactant, and a water-soluble plasticizer.
12. (Currently Amended) The method of claim 11 wherein ~~the~~ said water-soluble surfactant is a fluorocarbon-based surfactant.
13. (Currently Amended) An apparatus comprising:

a substrate; ~~and~~

~~an immersion lithography~~ a photoresist deposited on ~~the~~ said substrate, ~~the~~ said photoresist having incorporated therein one or more additives that alter ~~one or more~~ liquid-contact properties of ~~the~~ said photoresist;

an index-matching liquid disposed in contact with said photoresist;

and

a last lens element disposed in contact with said index-matching liquid.

14. (Currently Amended) The apparatus of claim 13 wherein ~~the one or more~~ said liquid-contact properties of ~~the~~ said photoresist are specific to a particular liquid.

15. (Currently Amended) The apparatus of claim 14 wherein ~~the~~ said particular liquid is comprises water and ~~the~~ said one or more additives ~~include~~ comprises at least one hydrophobic additive.

16. (Currently Amended) The apparatus of claim 15 wherein ~~one of the~~ said at least one hydrophobic additive comprises ~~additives is~~ an ionic photoacid generator.

17. (Currently Amended) The apparatus of claim 15 wherein ~~one of the~~ said at least one hydrophobic additive comprises ~~additives is~~ a water-insoluble quencher.

18. (Currently Amended) The apparatus of claim 15 wherein at least one of the ~~water-insoluble constituents~~ said hydrophobic additives ~~comprises~~ is a water-insoluble polymer.
19. (Currently Amended) The apparatus of claim 15 wherein water-soluble constituents are bound to said at least one of the ~~water-insoluble constituents~~ hydrophobic additive via a binding method selected from the a group consisting of covalent binding, ion pairing, and Van der Waal's forces.
20. (Currently Amended) The apparatus of claim 15 wherein said at least one ~~or more~~ of the ~~water-insoluble constituents~~ hydrophobic additive may react when said photoresist is used to modulate susceptibility to etch.
21. (Currently Amended) The apparatus of claim 15 14 wherein the said particular liquid is comprises water and the said one or more additives ~~include~~ comprises at least one hydrophilic additive.
22. (Currently Amended) The apparatus of claim 15 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble quencher.
23. (Currently Amended) The apparatus of claim 15 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble buffer.

24. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble surfactant.

25. (Currently Amended) The apparatus of claim ~~15~~ 24 wherein ~~the~~ said water-soluble surfactant ~~is~~ comprises a fluorocarbon-based surfactant.

26. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble plasticizer.

27. (Currently Amended) A system comprising:

a last lens element of a lithography exposure system, ~~the~~ said last lens element having a specific index of refraction;

an index-matching liquid in contact with ~~the~~ said last lens element, ~~the~~ said index-matching liquid having an index of refraction ~~substantially~~ equal to ~~the~~ said specific index of refraction to within a specified tolerance; and

a photoresist layer in contact with ~~the~~ said index-matching liquid, ~~the~~ said photoresist layer composed of photoresist having incorporated therein one or more constituents that improve the contact between ~~the~~ said index-matching liquid and ~~the~~ said photoresist layer.

28. (Currently Amended) The system of claim 27 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water and ~~the~~ said one or more constituents ~~includes~~ comprises at least one water-insoluble constituent.
29. (Currently Amended) The system of claim 28 wherein ~~one of the~~ said at least one water-insoluble constituent comprises ~~constituents is~~ a constituent selected from ~~the~~ a group consisting of a non-ionic photoacid generator, a hydrophobic ionic photoacid generator, a quencher, a polymer, an oligomer, and a molecular species.
30. (Currently Amended) The system of claim ~~29~~ 27 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water and ~~the~~ said one or more constituents ~~includes~~ comprises at least one water-soluble constituent wherein said at least one ~~of the~~ water-soluble constituents ~~is~~ comprises a constituent selected from ~~the~~ a group consisting of a water-soluble photoacid generator, a water-soluble quencher, a water-soluble buffer, a water-soluble surfactant, and a water-soluble plasticizer.